

TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A FILING UNDER 35 U.S.C. 371

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U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

10/018952

INTERNATIONAL APPLICATION NO.  
PCT/DE00/01903INTERNATIONAL FILING DATE  
16 June 2000 (16/06/2000)PRIORITY DATE CLAIMED  
21 June 1999 (21/06/1999)

## TITLE OF INVENTION

METHOD AND DEVICE FOR ACCESSING A TELECOMMUNICATIONS NETWORK AND FOR BILLING  
TELECOMMUNICATION SERVICES

## APPLICANT(S) FOR DO/EO/US

BRUNE, Peter et al.

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
4. ☒ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
  - a. ☒ is attached hereto (required only if not communicated by the International Bureau).
  - b. ☐ has been communicated by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
  - a. ☒ is attached hereto.
  - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
  - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
  - b. ☐ have been communicated by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☐ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☒ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☒ A copy of the International Search Report (PCT/ISA/210).

## Items 13 to 20 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
20. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
22. ☒ Certificate of Mailing by Express Mail
23. ☒ Other items or information:

Written Opinion dated March 26, 2001, Response to Written Opinion, English language translation of Response to Written Opinion, Notification of Recording of a Change, and Check No. 102018

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PCT/DE00/01903ATTORNEY'S DOCKET NUMBER  
RBL0084

24. The following fees are submitted:

**BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :**

- ☐ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO ..... \$1040.00
- ☒ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO ..... \$890.00
- ☐ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO ..... \$740.00
- ☐ International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) ..... \$710.00
- ☐ International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) ..... \$100.00

**ENTER APPROPRIATE BASIC FEE AMOUNT =**

\$890.00

Surcharge of \$130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).

\$0.00

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE
Total claims	8 - 20 =	0	x \$18.00
Independent claims	4 - 3 =	1	x \$84.00

\$0.00

\$84.00

Multiple Dependent Claims (check if applicable). ☐

\$0.00

**TOTAL OF ABOVE CALCULATIONS =**

\$974.00

☒ Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.

\$0.00

**SUBTOTAL =**

\$974.00

Processing fee of \$130.00 for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).

\$0.00

**TOTAL NATIONAL FEE =**

\$974.00

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). ☐

\$0.00

**TOTAL FEES ENCLOSED =**

\$974.00

Amount to be refunded	\$
charged	\$

- a. ☒ A check in the amount of \$974.00 to cover the above fees is enclosed.
- b. ☐ Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \_\_\_\_\_ to cover the above fees. A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 02-0385. A duplicate copy of this sheet is enclosed.
- d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

**NOTE:** Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

**SEND ALL CORRESPONDENCE TO:**

John F. Hoffman  
BAKER & DANIELS  
111 East Wayne Street, Suite 800  
Fort Wayne, IN 46802

TX: (219) 424-8000  
FAX: (219) 460-1700

SIGNATURE

JOHN F. HOFFMAN

NAME

26,280

REGISTRATION NUMBER

DECEMBER 21, 2001

DATE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	)	
Peter Brune et al.	)	Group:
Serial No.	)	
Filed:	)	Examiner:
Title: METHOD AND DEVICE FOR ACCESSING	)	
A TELECOMMUNICATIONS NETWORK AND	)	
FOR BILLING TELECOMMUNICATIONS	)	
SERVICES	)	

**PRELIMINARY AMENDMENT DELETING MULTIPLE DEPENDENT CLAIMS**

Assistant Commissioner of Patents  
Washington, DC 20231

Sir:

Prior to calculating the filing fee, please enter the following amendments to the application.

**IN THE CLAIMS**

In claim 3, line 1, delete ""or 2".

In claim 4, line 1, delete "one of claims 2 or 3" and substitute therefor --claim 2--.

Please add the following new claims:

--7. Method according to claim 2, characterized in that an authentication process is used by means of which the identify of the subscriber using services in the telecommunication network is established by at least one of the following measures:

- by digital signature;
- directly over existing dependable mechanisms, such as EC card, electronic market;
- by technical proof beyond doubt of the association of the subscriber with a dependable third party which takes responsibility for the payment, such as a credit card organization.

8. Method according to claim 3, characterized in that the special subscriber identification module (9) and the special homeland register (10) have at their disposal restricted functionalities with respect to a regularly used subscriber identification module (2) and homeland register HLR (7).

Respectfully submitted,

John F. Hoffman  
Registration No. 26,280

Attorney for Applicant

JFH/pmp

BAKER & DANIELS  
111 East Wayne Street, Suite 800  
Fort Wayne, IN 46802

Dated: December 21, 2001

Method and device for accessing a telecommunication  
network and for billing telecommunication services.

[0001] The invention relates to a method and to a device for accessing a telecommunications network and for billing telecommunications services according to the generic term of the independent patent claims.

[0002] The described invention presents novel processes with respect to the classical mechanisms of network operators (as a rule mobile radio) for them to make services available to their customers and to take payments from the latter for the performance of same. In this context, it is primarily a matter of new access mechanisms and of means for the (mobile) telecommunication network, for modified security mechanisms, as well as for innovative accounting methods. In the interest of simplification the invention is described in the following on the basis of mobile radio networks of the GSM standard, but it is also applicable to other telecommunication networks, insofar as the limit conditions given in the specification are also applicable to these networks.

[0003] In general it can be said that a mobile radio telephone services operator, by means of his telecommunication network, sets up an infrastructure which makes possible the utilization of certain services (primarily telephony). These services can be used by any subscriber under the fulfillment of certain boundary conditions, in return for payment. The network operator decides in each individual case to which subscriber he allows access to his telecommunication network (and therewith to his services), and which subscriber he excludes from the claiming of the services associated with the access. In the classical case there are two set-ups that allow a subscriber an access entitlement to a telecommunication network:

a) on a subscription basis:

The subscriber signs a contract with a home operator, which makes possible for the subscriber the use of certain services for the running time of the contract. Typical for this set-up is that the user pays as a rule a continuous basic amount and, for the claiming of services, a quantity-dependent fee. The payment occurs as a rule on a creditor basis per monthly account.

b) on a prepaid basis:

The subscriber buys from the Home Operator a certain type and amount of services and pays for these in advance. For this he is entitled to the use of the network and of the areas particular to the purchased scope agreed upon. The network operator checks the type and amount of the services used and, after the subscriber has used up his purchase contingent, again withdraws the access entitlement.

**[0004]** Especially for the GSM mobile radio networks, there exist two variants for the utilization of the telecommunication services:

- a) The subscriber uses exclusively the infrastructure of the Home Operator. The payment for this use is made according to one of the above processes.
- b) The subscriber uses at least in part the infrastructure of another network operator (Visited Operator). The payment is made to the Home Operator according to the above processes. Moreover, without influencing the subscriber, for the accessing of the foreign network corresponding compensation payments are made between the operators (Roaming Fall: roaming case).

**[0005]** The set-ups described make it clear that the control of the network operator over the access entitlement of the subscribers represents a central function. Both in the case of the exclusive utilization of the home network and also in the roaming case, in the use of a foreign network there are defined mechanisms for the GSM which ensure the authenticity of the subscriber.

**[0006]** The technical medium which makes this possible is the chip card or subscriber identity module (SIM) in combination with data in the network, for example data which are deposited in the home register (Ht.R) in the authentication center (AC), or in the visitor register (VLR). Ultimately the SIM represents the basis that permits the operator (Home or Visited) to check the access entitlement of the subscriber.

**[0007]** The problem of the invention is to propose a system and a process for access to telecommunication networks and for the billing of the telecommunication services that, as compared to the classical mechanisms, is simpler and more convenient both for the network operator and also for the subscriber.

**[0008]** This problem is solved by the characterizing features of the independent patent claims.

**[0009]** The classical set-up ensures two fundamental points about the access mechanisms described:

- a. The network operator knows who the subscriber is
- b. The network operator knows that he is receiving (or already has received) payment for the service claimed.

**[0010]** Substantially considered, actually only point b) is decisive. This is likewise ensured according to the invention, in which case, however, the classical set-up is abandoned.

**[0011]** According to the invention there holds, as in the classic case, the following:

- the network operator makes available an infrastructure and services;
- these can be used in return for payment;
- the network operator controls the access to this services.

**[0012]** In contract to the two classical possibilities--over subscription or over payment in advance (Prepaid) in order to obtain access entitlement to the network--according to the invention the following is provided:

**[0013]** The subscriber must in advance (or subsequently) notify the network operator in some manner (or must convince this party) that a payment for the service requested (or to be requested) either is being made, or has already been made, as he:

- a) proves beyond doubt his identity and a dependability associated therewith (for example: "I am the federal Chancellor of the Federal Republic of Germany", using a digital signature, for example).
- b) pays directly over dependable mechanisms (EC card, electronic exchange)
- c) proves beyond doubt his association with a dependable third party who takes responsibility for the payment (a credit card organization, for example).

**[0014]** If the subscriber can fulfill one of the above-mentioned requests (a, b), or c), then primarily the claim of the network operator to obtaining a payment from the subscriber is satisfied. Depending on the process carried out, and on the process environment, even the point "Who is the subscriber?" is to be fulfilled, which, to be sure, is not compulsorily required.

**[0015]** Ever according to variants in character and in form of execution, the demands of the network operator in regard to the certainty of payment by the subscriber are surely different, also in comparison to the classical set-up. The measure of security lies, to be sure,

solely in the judgment or estimation of the network operator. For the clarification of this fact there serves the classical set-up in the GSM network, in which the network operator

- decides on the technical security of the SIM;
- decides freely about the authentication algorithm (even the selection of a simple "XOE-algorithm" would be allowed);
- he himself determines the individual subscriber key (Ki) (even a constant key for all the subscribers would be allowed);
- decides on the security level of the entire key management process (generation, transport, storage).

**[0016]** According to a preferred form of execution of the invention it is provided to use a credit card as payment medium. All applications of hitherto which describe the use of credit cards as payment medium presume that the subscriber in principle has an access entitlement to a communication network, which he has already obtained by one of the above variants (subscription, Prepaid). The paying per credit card (predominantly of third parties) are settled in this way (likewise over the credit card). There is a band width, there, of forms of execution possibilities which differ in security and in user-friendliness. Let there be mentioned, for example, the following variants:

- the subscriber gives his credit card number to a search server;
- he uses the keyboard (DTMF-tones) for the input of his credit card number;
- he sends an SMS to a special server with his credit card data;
- with the aid of his MSISDN or IMSI an allocation to his credit card is established (which the subscriber has made known in advance to the network operator).

**[0017]** What is novel in the process described here is that there is made possible for the subscriber the claiming of telecommunication services even without valid (classical) access entitlement, as he proves his good faith with respect to the network operator by means of a credit card.

**[0018]** In the identification process over the credit card again different variants are conceivable:

- a) The subscriber (not registered in the telecommunication network) obtains access only to a certain target (possibly by means of any arbitrary call number), under which he can identify himself by means of input of his credit card number (as a rule on "per call



basis"). This may include certain plausibility and security checks as well, such as, for example, pass word protection, the input of additional personal data, on line check of the data with the credit card organization, etc.

- b) The subscriber obtains the right to outgoing brief reports and can be registered in a same manner as under a).
- c) In the event that the credit card is chip-card based, the subscriber communicates his credit card data electronically, therefore directly with his credit card. This can take place in various ways:

- the end apparatus permits an access to a second card reader in which there is inserted the subscriber's credit card;
- the end apparatus accepts the credit card instead of the SIM. Instead of the IMSI (as in GSM) the credit card number is sent in full or in part to the network, with the registration procedure. The network operator must be in a position, there, to distinguish this case from the classical registration procedure.

- d) The network operator can himself perform an allocation between the SIM (not registered in the classical sense) and a credit card. This requires a previous, unrepeatable procedure, in which this allocation is established.

[0019] In order to make possible a service (as a rule telephony) for subscribers not reachable by telephone (in the classical sense) then, depending on the character of the set-up certain system preconditions are to be created (here for example GSM) which fulfill the following requirements:

- to a not roaming-qualified or non-registered or non-authenticated subscriber an access to the telecommunication network is to be granted;
- the access permits only a restricted functionality (for example only outgoing calls (MoC) to a certain target/destination;
- concerning the access a payment process is established by means of a credit card;
- a sure identification of the subscriber accomplished over the credit card allows him the unrestricted use of the network (for example MoCs);
- the billing for the service is based on the use of the credit card (for example on the credit card account).

[0020] The described process opens up new possibilities both for the subscribers and also for the network operator concerning service utilization and mutual business relationship, and has a number of advantages.

[0021] For the subscriber who is in possession of a credit card this process has the advantage, without valid (telecommunication) subscriber relation or without valid roaming entitlement, nevertheless to obtain the services of a network operator.

[0022] For the network operator this likewise has a substantial advantage. The services that the network operator makes available to the (mobile radio) subscribers require no registration. Registration means, for the network operator, the preparing of corresponding system resources, which again is very cost-intensive. Thus every personalized SIM, even if it is not yet activated--therefore has no MSISDN and services allocated to it--has resources in HLR/AC or in the card management system KMS. Since these resources are, on the one hand, expensive and are, on the other hand also numerically limited (number ranges for MSISDN) certain set-ups are forbidden such as, for example, a large-scale keeping in stock of SIMs, or a wide area distributing of cards into the area.

[0023] Unregistered SIMs have this restriction in large part. Thus it is entirely imaginable to distribute so-called "Simple-SIMs" in large number to end customers or points of sales, which would open up quite different marketing approaches. By a Simple-SIM in the simplest case a chip card is to be understood, which has, as sole functionality, the capacity of making possible the registration procedure for an end apparatus, as it makes available an IMSI. The IMSI does not have to be registered with the network operator, nor must the Simple-SIM be authenticated for--as described above--the network operator takes up this task and with these cards offers the registration per credit card. For example, it may be provided that each credit card customer obtains with his monthly bill a Simple-SIM sent to him. This Simple-SIM is installed in a cellular telephone and permits the (restricted) access to a mobile radio network, as the registration is developed over the credit card. The billing for the telecommunication services used occurs likewise over the credit card. Through elimination of the necessity to sign a subscription per contract, it is entirely imaginable to market the simple SIMs also over newsstands, filling stations, trade chains, etc. Likewise the possibility is offered to sign agreements with end apparatus producers, so that the latter will already supply their end apparatuses with a simple SIM of a network operator. This lies both

in the interest of the network operator as well as in the interest of the end apparatus producers and end customers, since the end apparatus is already telephonable without the signing of subscription contract.

[0024] A variant may consist, for example, in already forming the Simple-SIM in such manner that it can be transformed into a regular SIM in the event that the subscriber decides to enter into a subscription contract with the network operator. This can be accomplished by subsequently applying functions to the SIM (over-the-air) or clearing, as well as bringing the card data into the corresponding system in the network or clearing.

[0025] In the following the invention is explained in detail with reference to the drawing figures. In the process further features and advantages of the invention are yielded. In the drawing:

Fig. 1 shows Entering into the GSM network by means of error evaluation of the HLR;

Fig. 2 Identification and call build-up over credit card server (CC-Server);

Fig. 3 Entry into the GSM network by means of Simple-SIM and Simple-HLR.

[0026] The following depictions 1 and 2 show a first implementation variant of the invention. Fig. 1 shows an example for an entry procedure and the system adaptation associated therewith and Fig. 2 describes the identification process of a subscriber by means of credit card.

[0027] According to the invention a service use in the mobile radio network is made possible for a subscriber even without a valid SIM. Technical intervention is made there at the point where in the classical case the identification and authentication procedures of the network operator begin.

[0028] Let us take as an example the case according to Fig. 1, that an invalid SIM 2 is used in the end apparatus 1, and therewith it is attempted to obtain access to a (GSM) mobile radio network. Invalid SIM means in this context:

- not registered (IMSI unknown to the Home Operator)
- not capable of roaming (the IMSI belongs to a Home Operator who has not issued any Roaming permit to the subscriber)
- not authentic (the authentication procedure fails, for example because of false Ki).

[0029] In all cases in the classical case the network operator (sends) a corresponding error report to the end apparatus 1 and denies access to his infrastructure (an exception if made exclusively for the emergency call "112").

[0030] The new set-up alters the process of hitherto insofar that the network operator does, to be sure, register that the SIM 2 used has no access entitlement in the classical sense, but he does not in principle deny the access to the subscriber. On the contrary, the network operator offers the subscriber the opportunity to identify himself by means of suitable procedures, alternatively, for example, via his credit card. If the identification is successful in the meaning of the network operator, then the party offers the subscriber a certain spectrum of services.

[0031] The network operator achieves a certain "payment guarantee" by the security of the defined identification mechanism as well as by the usual payment guarantees of credit card firms on claiming of service performances to their customers.

[0032] A person would like to register himself over a mobile radio apparatus 1 in the mobile radio network, and telephone over this mobile radio network. The subscriber has a subscriber identification module 2 (SIM) which contains an international mobile subscriber identification (IMSI), it being assumed that the IMSI is not registered in the mobile radio network concerned and that the SIM is not roaming-entitled in the mobile radio network concerned. This means that the person normally by means of the SIM 2 cannot register himself in the mobile radio network concerned and avail himself of its services.

[0033] According to the invention, however, this is now possible, as first of all a report of the end apparatus 1 occurs at the appropriate base station control 3 (BSC). Since the end apparatus 1 or SIM 2 is not hitherto registered, first of all a Location Update Procedure is sent over the mobile intermediation point 4 (MSC) and the visitor register 5 (VLR) to the home register 7 (HLR), at which inter alia the IMSI deposited on the SIM 2 is transferred to the HLR 7. The HLR 7 checks whether the IMSI is registered--in this case it is not--and sends an error report (ERROR) back to the VLR 5 that the IMSI is not known. In the VLR a special module 6 is arranged, the assignment of which is to catch up these special error reports, evaluate them, and release correspondingly predetermined actions.

[0034] Simultaneously the normally executed authentication and cipher procedures are switched off and the Location Update Procedure is concluded, as the accomplished simplified residence/say registration is positively confirmed.

[0035] Fig. 2 shows the call build-up after completed report of the end apparatus 1 or of the SIM 2 in the mobile radio network. The call wish of the end apparatus 1 is forwarded over the BSC 3 and the MSC 4 to the VLR 5. Initiated by the special module 6 which releases a special treatment of the call wish, there occurs first of all a blocking (ODB: Operator Determined Barring) of the further connection build-up to the desired call number. Instead of this, the call is rerouted by means of an established Routing to a specially arranged credit card server 8 (CC-Server), which either is a part of the mobile radio network, therefore governed by the network operator, or can be connected externally to the mobile radio network.

[0036] The CC-Server 8 begins a dialog (speech dialog or text display) with the subscriber, in which the subscriber is requested to give his credit card number and its expiration date, for example over the keyboard of the end apparatus. These data are forwarded to the CC-Server. The CC-Server 8 checks the data given by the subscriber (validity, barring notations, etc.) of the credit card and in the "good" case gives release to the mediating station MSC 4 or the VLR 5, to switch through the call wish of the subscriber.

[0037] There occurs a more regular call build-up to the call number desired by the subscriber, in which the fees that have fallen due for the connection are computed by the network operator with the aid of the subscriber credit card data.

[0038] A special form of execution of the invention according to Fig. 3 preferably uses, as access medium to the GSM network, a chip-card in the form of a so-called Simple-SIM 9, which is registered in the GSM network of the Home Operator, to be sure, but which, with respect to a Standard-SIM 2 is constructed with clearly reduced functionality. Every Simple-SIM has a special IMSI which is chosen, for example, in such manner that it characterizes the Simple-SIM clearly as such. It would also be possible to use the same IMSI for all issued Simple-SIMs, since the IMSI is not needed for the identification of a certain subscriber, but exclusively for the identification of a Simple-SIM.

[0039] Even a set-up to use a chip card-based card directly as access medium would be possible, provided that the end apparatus used supports this.

[0040] In the example according to Figs. 1 and 2 also the use of a Simple-SIM 9 or of a special credit card is conceivable.

[0041] On network side there is arranged in addition to the regular HLR 7 a so-called Simple-HLR 10, which is appropriate exclusively for the registration of the simple SIMs. Like the regular HLR 7, the simple HLR 10 used for the registration of the simple SIMs also must have certain functionalities, especially at its interface point; but internally it can clearly be more simply implemented and, for example, have only one standard subscriber profile, no MSISDNa, simplified authentication mechanisms, etc. At least the simple HLR 10 must be capable of recognizing the IMSIs allocated to the simple SIMs as such.

[0042] Analogously to the example of execution according to Figs. 1 and 2, the end apparatus or the simple SIM 9 reports to the mobile radio network, as first of all a Location Update Procedure is initiated. With the aid of the IMSI communicated from the simple SIM 9, the simple HLR 10 recognizes that a special handling of this connection wish (of the subscriber) is necessary. Since, however, the IMSI of the simple SIM is known to the simple HLR 10, a regular entering of the end apparatus 1 into the mobile radio network is permitted, with use of the corresponding authentication and cipher mechanisms. There it is possible to use simplified authenticating and coding parameters which can be carried out with constant, uniform Challenge/Response pairs or with variable Challenge/Response pairs which are generated in the simple HLR 10 by the cryptographic process.

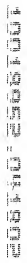
[0043] Despite a completed authentication of subscriber with the aid of his Simple SIM 9, the call further-switching by the simple HLR 10 is at first blocked, as an error report (ERROR) is given back to the VLR 5.

[0044] The special module 6 in the VLR 5 provides that the error reports of the simple HLR 10 are correspondingly evaluated and converted. In the use of ODB reports the call wish analogously as in the form of execution example according to Figs. 1 and 2, is then rerouted onto a credit card server 8, where the identification of the subscriber per credit card occurs. The subscriber can then dial the target (destination) call number, and the call build up to the desired target call number can take place. With the use of an IN-trigger, the target call number can already be dialed in the dialing of the CC-server 8.

WO 00/79022

PCT/DE00/01903

### Drawing Legend

- 
- 1 end apparatus
  - 2 SIM
  - 3 Base station control (BSC)
  - 4 Mobile radio relaying (MSC)
  - 5 Visitor register
  - 6 Special module
  - 7 Homeland register (HLR)
  - 8 Credit card server (CC-server)
  - 9 Simple SIM
  - 10 Simple HLR

Patent Claims

1. Method for the simplified access to a telecommunication network and the billing of telecommunication services,  
characterized in that in the telecommunication network authentication processes are used which make it possible for the subscriber to ascertain at any freely choosable point in time that a payment is being made for the service requested or to be requested, or has already been made.
2. Method according to claim 1, characterized in that an authentication process is used by means of which the identity of the subscriber using services in the telecommunication network is established by at least one of the following measures:
  - by a digital signature;
  - directly over existing dependable mechanisms (EC card, electronic exchange)
  - by technical proof beyond doubt of the association of the subscriber with a dependable third party which takes responsibility for the payment (credit organization).
3. Method according to claim 1 or 3, characterized in that the authentication and registration of the subscriber, and the billing of the requested services, occur by means of a credit card.
4. Process according to one of claims 1 to 3, characterized in that application of the subscriber to the telecommunication network occurs with the aid of a special subscriber identity module (Simple-SIM).



5. Method according to one of claims 1 to 4, characterized in that in the telecommunication network a special homeland register (Simple-HLR) is set up, which serves exclusively for the authentication and the registration of the special subscribers identification modules (Simple-SIMs).
6. Method according to one of claims 1 to 5, characterized in that the special subscriber identification module and the special homeland register have at their disposal restricted functionalities with respect to the regularly used subscriber identification module and the homeland register.
7. Device for simplified access to a telecommunication network and for the billing of telecommunication services, characterized in that the devices are present by means of which a subscriber can prove to the network operator in time context with an electronic payment process that a payment is being made, or has already been made for services requested or to be requested.

[Drawings follow]

TRANSLATION

WO 00/79822 A1

Method and device for accessing a telecommunication network and for billing telecommunication services.

Abstract

The invention relates to a method and a device for accessing a telecommunication network and for billing telecommunication services, whereby there are presented new processes, as compared to those of classical mechanisms of network providers, services are offered to their customers and fees are charged for providing the same. In this context the invention primarily concerns novel access mechanisms and access media to a telecommunications network, modified security mechanisms as well as innovative counting methods. The invention is characterized in that authentication methods are used in the telecommunication network, which permit a subscriber to certify at any one freely choosable point in time that a payment for a service which has been solicited or which is to be solicited, is provided or has already been provided.

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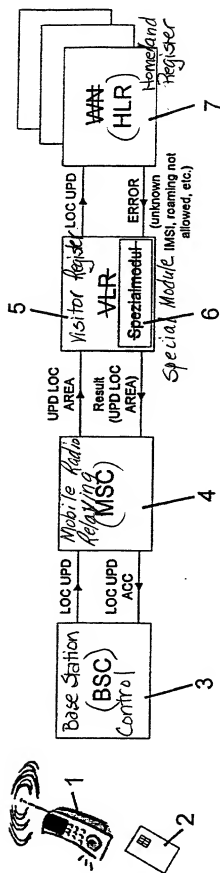


FIG. 1

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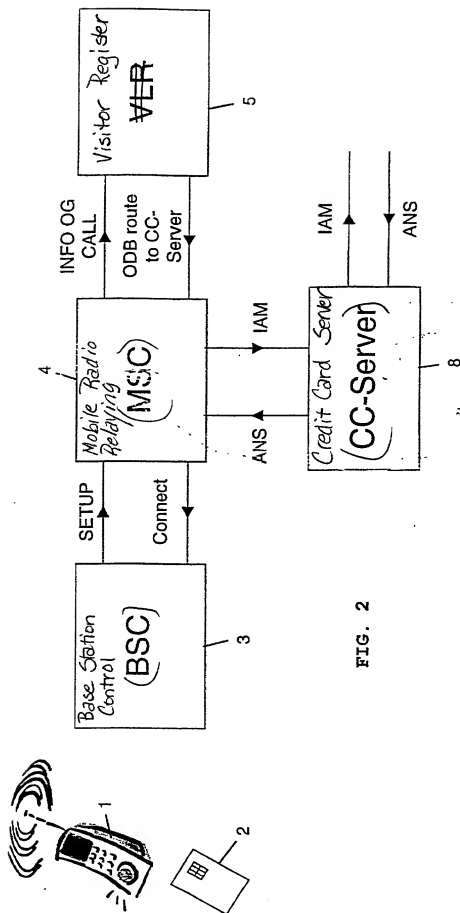


FIG. 2

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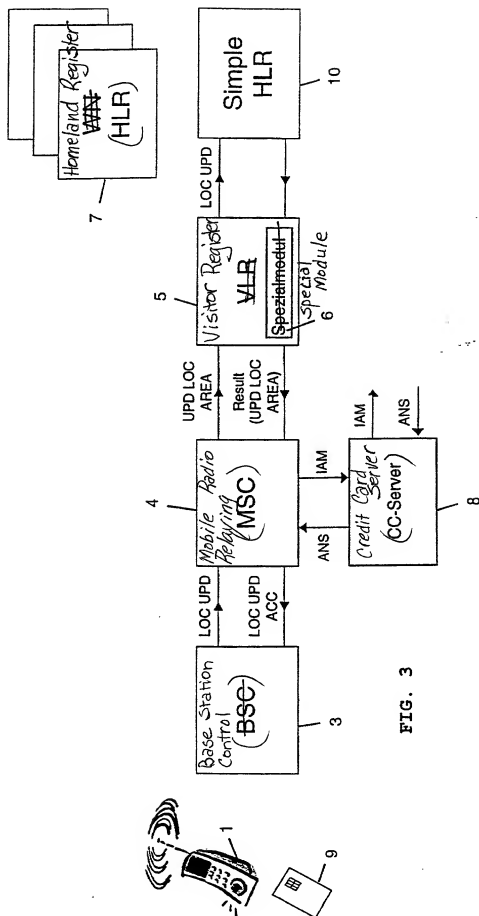


FIG. 3

# Declaration and Power of Attorney for Patent Application Erklärung für Patentanmeldungen mit Vollmacht

#6

## German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

daß mein Wohnsitz, meine Postanschrift und meine Staatsangehörigkeit den im nachstehenden nach meinem Namen aufgeführten Angaben entsprechen, daß ich nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent für die Erfindung mit folgendem Titel beantragt wird:

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Ich erkenne meine Pflicht zur Offenbarung jeglicher Informationen an, die zur Prüfung der Patentfähigkeit in Einklang mit Titel 37, Code of Federal Regulations, § 1.56 von Belang sind.

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

METHOD AND DEVICE FOR ACCESSING A  
TELECOMMUNICATIONS NETWORK AND FOR BILLING  
TELECOMMUNICATIONS SERVICES

the specification of which is attached hereto unless the following box is checked:

☒ was filed on June 16, 2000  
as United States Application Number or PCT  
International Application Number PCT/DE00/01903  
and was amended on \_\_\_\_\_  
(if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

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Prior Foreign Applications  
(Frühere ausländische Anmeldungen)

Priority Not Claimed  
~~Priorität nicht beansprucht~~

199 28 343.5	Germany
(Number)	(Country)
(Nummer)	(Land)
100 12 392.9	Germany
(Number)	(Country)
(Nummer)	(Land)

21 June 1999  
(Day/Month/Year Filed)  
(Tag/Monat/Jahr der Anmeldung)

☐

15 March 2000  
(Day/Month/Year Filed)  
(Tag/Monat/Jahr der Anmeldung)

☐

Ich beanspruche hiermit Prioritätsvorteile unter Title 35, US-Code, § 119(e) aller US-Hilfsanmeldungen wie unten aufgezählt.

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

(Application No.)	(Filing Date)
(Aktenzeichen)	(Anmeldetag)
(Application No.)	(Filing Date)
(Aktenzeichen)	(Anmeldetag)

Ich beanspruche hiermit die mir unter Title 35, US-Code, § 120 zuzurechnenden Vorteile aller unten aufgeführten US-Patentanmeldungen bzw. § 365(c) aller PCT internationalen Anmeldungen, welche die Vereinigten Staaten von Amerika benennen, und erkenne, insofern der Gegenstand eines jeden früheren Anspruchs dieser Patentanmeldung nicht in einer US-Patentanmeldung, bzw. PCT internationalen Anmeldung in in einer gemäß dem ersten Absatz von Title 35, US-Code, § 112 vorgeschriebenen Art und Weise offenbart wurde, meine Pflicht zur Offenbarung jeglicher Informationen an, die zur Prüfung der Patentfähigkeit in Einklang mit Title 37, Code of Federal Regulations, § 1.56 von Belang sind und die im Zeitraum zwischen dem Anmeldetag der früheren Patentanmeldung und dem nationalen oder im Rahmen des Vertrags über die Zusammenarbeit auf dem Gebiet des Patentwesens (PCT) gültigen internationalen Anmeldetags bekannt geworden sind.

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DE00/01903	June 16, 2000
(Application No.)	(Filing Date)
(Aktenzeichen)	(Anmeldetag)
(Application No.)	(Filing Date)
(Aktenzeichen)	(Anmeldetag)

Published
(Status) (patented, pending, abandoned)
(Status) (patentiert, schwebend, aufgegeben)
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POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: (list name and registration number)

John F. Hoffman, Regis. No. 26,280; Anthony Niewyk, Regis. No. 24,871; Michael D. Smith, Regis. No. 40,181; Michael S. Gzybowski, Regis. No. 32,816; Michael D. Schwartz, Regis. No. 44,326; Adam F. Cox, Regis. No. 46,644; Abigail M. Butler, Regis. No. 48,238; Thomas A. Adams, Regis. No. 48,230; and Kimberly J. Paulus, Regis. No. 48,358; all of BAKER & DANIELS, 111 East Wayne Street, Suite 800, Fort Wayne, Indiana 46802

Postanschrift:

Send Correspondence to:

Telefonische Auskunft: (Name und Telefonnummer)

John F. Hoffman, BAKER &amp; DANIELS

Direct Telephone Calls to: (name and telephone number)

John F. Hoffman

219-424-8000

Vor- und Zuname des einzigen oder ersten Erfinders	1-00	Full name of sole or first inventor	Peter Brune
Unterschrift des Erfinders	Datum	Inventor's signature	Date
			24.1.02
Wohnsitz		Residence	Meckenheim, Germany DEX
Staatsangehörigkeit		Citizenship	German
Postanschrift		Post Office Address	Noldestrasse 56 D-53340 Meckenheim GERMANY
Vor- und Zuname des zweiten Miterfinders (falls zutreffend)	2-00	Full name of second joint inventor, if any	Ulrike Feuser
Unterschrift des zweiten Erfinders	Datum	Second Inventor's signature	Date
			25.01.02
Wohnsitz		Residence	Bonn, Germany DEX
Staatsangehörigkeit		Citizenship	German
Postanschrift		Post Office Address	Rheinallee 25 D-53173 Bonn GERMANY

(Im Falle dritter und weiterer Miterfinder Miterfinder sind die entsprechenden Informationen und Unterschriften hinzuzufügen.)

(Supply similar information and signature for third and subsequent joint inventors.)



3-00

Michael Langer  
Full Name of Third Inventor

Michael Langer 28/02/02  
Inventor's Signature Date

London, Great Britain GBN  
Residence  
German  
Citizenship

4 Epirus Road  
London, SW6 7UH Great Britain  
Post Office Address

4-00

Patrik Ljungström  
Full Name of Fourth Inventor

P. Ljungström 28.1.2002  
Inventor's Signature Date

Königswinter, Germany DEX  
Residence  
German Swedish  
Citizenship

Am Fronhof 11  
D-53639 Königswinter, Germany  
Post Office Address

5-00

Uwe Michel  
Full Name of Fifth Inventor

Uwe Michel 09.02.02.  
Inventor's Signature Date

Bad Honnef, Germany DEX  
Residence  
German  
Citizenship

Lohmarstrasse 10  
D-53604 Bad Honnef, Germany  
Post Office Address

6-00 Walter Mohrs  
Full Name of Sixth Inventor

Walter Mohrs 6/2/02  
Inventor's Signature Date

Bonn, Germany DER  
Residence  
German  
Citizenship

Rosenhain 3  
D-53123 Bonn, Germany  
Post Office Address

7-00 Wolfgang Ptacek  
Full Name of Seventh Inventor

Wolfgang Ptacek 29.07.02  
Inventor's Signature Date

Bad Honnef, Germany DER  
Residence  
German  
Citizenship

Gerhard-Dahm-Strasse 5b  
D-53604 Bad Honnef, Germany  
Post Office Address